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## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

## **Listing of Claims:**

- 1. (currently amended) A computer aided design (CAD) system for designing high performance circuits, said CAD system comprising:
  - a graphical user interface (GUI) having input fields including conductor and dielectric input fields;
  - a template generation engine interfaced with said GUI and generating multidimensional templates from interconnect configuration files; and
  - a field solver using conductor and dielectric inputs guided by said multidimensional templates to determine circuit interconnection electric parameters.
  - 2. (original) A CAD system as in claim 1, wherein said input fields are geometric and property specification input fields.
  - 3. (original) A computer aided design (CAD) system comprising:
  - a template generation engine generating templates from interconnect configuration files;
- a field solver generating broadband passive element relationships from said templates;
- a circuit builder generating circuit description files from device technology models and said broadband passive element relationships; and
- a simulator simulating circuit responses for transmission line models from said circuit description files.

- 4. (original) A CAD system as in claim 3, further comprising:
- a geometry and material definition module receiving process description and generating said interconnect configuration files.
- 5. (original) A CAD system as in claim 4, wherein process inputs are varied in said process description through a graphical user interface (GUI).
- 6. (original) A CAD system as in claim 5, wherein conductor geometric and property specifications and dielectric geometric property specifications for interconnect wiring layers are provided to said GUI.
- 7. (original) A CAD system as in claim 5, wherein said interconnect configuration files include two dimensional inductance templates and three dimensional per unit capacitance values for interconnect wiring layers.
- 8. (original) A CAD system as in claim 5, wherein templates include two dimensional (2D) inductance templates and three dimensional (3D) capacitance templates.
- 9. (currently amended) A CAD system as in claim <u>8</u> [[5]] wherein said 2D <u>inductance</u> templates and 3D capacitance templates are combined to provide multiple dielectric stack inclusion in capacitance calculation.
- 10. (original) A CAD system as in claim 5, wherein said broadband passive relationships include frequency dependent resistance and inductance for selected signal conductors.
- 11. (original) A CAD system as in claim 5 wherein two dimensional and three dimensional resistance and inductance templates are combined to provide wide-band circuit parameters.

- 12. (original) A CAD system as in claim 5 wherein said template generation engine generates two dimensional (2D) broadband inductance templates for lines in a first layer, said 2D broadband inductance templates including far reference conductors in said first layer and in at least each of a layer above and below said first layer.
- 13. (original) A CAD system as in claim 5 wherein said template generation engine generates three dimensional (3D) templates for capacitance calculation in a signal layer, said 3D templates including variable orthogonal wiring density in layers above and below said signal layer.
- 14. (original) A CAD system as in claim 5, wherein said GUI displays simulated said circuit responses.
- 15. (original) A CAD system for designing high performance circuits, said CAD system comprising:
- a graphical user interface (GUI) having input fields including conductor and dielectric input fields;
- a geometric conductor configuration module combining said conductor and dielectric field inputs, said geometric conductor configuration module producing an interconnect structure representation bounded by electromagnetic boundary conditions; and
- a field solver using produced said interconnect structure and the electromagnetic boundary conditions to determine interconnection structure parameters.
- 16. (original) A CAD system as in claim 15, wherein said input fields are geometric and property specification input fields.
- 17. (original) A CAD system, as in claim 16, wherein said geometric conductor configuration module produces a two dimensional (2D) conductor representation.

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- 18. (original) A CAD system, as in claim 17, wherein said 2D conductor representation is a 2D capacitive representation.
- 19. (original) A CAD system, as in claim 18, wherein said 2D capacitive representation further includes a conductance representation of dielectric properties.
- 20. (original) A CAD system, as in claim 19, wherein said 2D representation process is a 2D inductive representation.
- 21. (original) A CAD system, as in claim 20, wherein said 2D inductive representation further includes a resistive representation of conductors and dielectric properties.
- 22. (original) A CAD system, as in claim 21, wherein said 2D inductive representation further includes frequency dependent inductance effects.
- 23. (original) A CAD system, as in claim 22, wherein the frequency dependent inductance effects include skin effects, proximity effects and return path proximity effects.
- 24. (original) A CAD system, as in claim 23, wherein said geometric conductor configuration module produces a three dimensional (3D) conductor representation.
- 25. (original) A CAD system, as in claim 24, wherein said 3D conductor representation is a 3D capacitive representation.
- 26. (original) A CAD system, as in claim 24, wherein said 3D conductor representation is a 3D inductive representation.

- 27. (original) A CAD system as in claim 24 that generates circuit netlists for simulation, said netlists providing an equivalent synthesized circuit based representation of frequency-dependent net behavior.
- 28. (original) A CAD system as in claim 24 that generates parameterized netlists.